in which M^{II} is at least one alkaline earth metal element selected from the group consisting of Mg, Ca, Sr and Ba; M^{III} is at least one rare earth element selected from the group consisting of Y, La, Gd and Lu; and x and y are numbers satisfying the conditions of $0<x\leq 0.1$ and $0<y\leq 0.1$, respectively, to cause the phosphor to emit a green light;

and

measuring a variation per unit time of strength of the green light.

5. (ONCE AMENDED) A method of producing a radiation image which comprises the steps of:

applying a radiation having passed through a target or having been radiated by a target onto a radiation image storage panel containing a layer of terbium-samarium co-activated alkaline earth metal rare earth oxide phosphor which is composed of an oxygen atom and a composition of the formula (I):

$$M^{II}M^{III}_2:xTb, ySm \qquad (I)$$

in which M^{II} is at least one alkaline earth metal element selected from the group consisting of Mg, Ca, Sr and Ba; M^{III} is at least one rare earth element selected from the group consisting of Y, La, Gd and Lu; and x and y are numbers satisfying the conditions of $0<x\leq 0.1$ and $0<y\leq 0.1$, respectively, to cause the phosphor to emit a green light;

determining a variation per unit time of strength of the green light in each pixel which is imaginarily set on the storage panel, to obtain two-dimensional image data;

and

producing a radiation image from the obtained image data.

7. (ONCE AMENDED) A method for measuring a dose of ultraviolet rays which comprises the steps of:

applying a target ultraviolet rays to a means containing a terbium-samarium co-activated alkaline earth metal rare earth oxide phosphor which is composed of an oxygen atom and a

composition of the formula (I):

$$M^{II}M^{III}_2:xTb, ySm \quad (I)$$

in which M^{II} is at least one alkaline earth metal element selected from the group consisting of Mg, Ca, Sr and Ba; M^{III} is at least one rare earth element selected from the group consisting of Y, La, Gd and Lu; and x and y are numbers satisfying the conditions of $0<x\leq 0.1$ and $0<y\leq 0.1$, respectively, to cause the phosphor to emit a green light;

and

measuring a variation per unit time of strength of the green light.

11. (ONCE AMENDED) A method for measuring a radiation dose which comprises the steps of:

applying ultraviolet rays to a dosimeter containing a terbium-samarium co-activated alkaline earth metal rare earth oxide phosphor which is composed of an oxygen atom and a composition of the formula (I):

$$M^{II}M^{III}_2:xTb, ySm \quad (I)$$

in which M^{II} is at least one alkaline earth metal element selected from the group consisting of Mg, Ca, Sr and Ba; M^{III} is at least one rare earth element selected from the group consisting of Y, La, Gd and Lu; and x and y are numbers satisfying the conditions of $0<x\leq 0.1$ and $0<y\leq 0.1$, respectively, to cause the phosphor to emit a green light and a red light;

measuring a strength of the green light and a strength of the red light;

applying a target radiation to the dosimeter, so as to cause variation of atomic valency for the terbium and samarium;

applying ultraviolet rays to the dosimeter to which the target radiation has been applied, to cause the phosphor to emit a green light and a red light;

measuring a strength of the latter green light and a strength of the latter red light;

and

comparing the former strengths of the green light and red light with the latter strengths of the green light and red light.

14. (ONCE AMENDED) A method of producing a radiation image which comprises the steps of:

applying ultraviolet rays to a radiation image storage panel containing a layer of a terbium-samarium co-activated alkaline earth metal rare earth oxide phosphor which is composed of an oxygen atom and a composition of the formula (I):

$$M^{II}M^{III}_2:xTb, ySm \qquad (I)$$

in which M^{II} is at least one alkaline earth metal element selected from the group consisting of Mg, Ca, Sr and Ba; M^{III} is at least one rare earth element selected from the group consisting of Y, La, Gd and Lu; and x and y are numbers satisfying the conditions of $0<x\leq 0.1$ and $0<y\leq 0.1$, respectively, to cause the phosphor to emit a green light and a red light;

measuring in each pixel which is imaginarily set on the storage panel, a strength of the green light and a strength of the red light, to obtain two-dimensional image data;

applying a radiation having passed through a target or having been radiated by a target onto said radiation image storage panel, so as to cause variation of atomic valency for the terbium and samarium in each pixel;

applying ultraviolet rays to the storage panel to which the target radiation has been applied, to cause the phosphor to emit a green light and a red light;

determining in each pixel a strength of the latter green tight and a strength of the latter red light, to obtain two-dimensional image data; and

processing the latter strengths of the green light and red light with reference to the former strengths of the green light and red light in each pixel, for producing a radiation image from the obtained image data.